

REMARKS

Summary of Claim Amendments

Claim 3 has been amended to more particularly claim the subject matter of the invention. Support can be found in at page 3, lines 11-19, of the specification.

Claim 11 has been amended to further conform with U.S. practice.

Therefore, no new matter is added.

Summary of the Official Action

Claim 3 is objected to. The Office Action states that it is unclear which synthetic resin particles are "said synthetic resin particles" and whether it is a chemical or physical bonding.

Claims 1-18 are rejected under 35 U.S.C. §103 (a) as being obvious over U.S. Patent No. 4,222,128 ("TOMONAGA"). The Office Action states that TOMONAGA discloses a composite implant material comprising a sintered apatite material and a thermoplastic or thermosetting resin. The Office Action further states that the implant material is prepared from a sintered apatite material by impregnating a thermoplastic or a thermosetting resin into the pores or holes of the sintered apatite material. The Office Action states that the difference with respect to the present invention is that TOMONAGA does not disclose a) the impregnation with both an un-crosslinked and an at least partially cross-linked synthetic resins and b) particulate calcium phosphate in addition to calcium phosphate block during impregnation process. The Office Action concludes that it would have been obvious to include both a thermoplastic or

thermosetting resin in the impregnation of calcium phosphate block and thereby obtain the present invention.

Response

Restriction

Applicants assumed that the Restriction Requirement of record has been made final, in view of the withdrawal of claims 19-24 from further consideration, although the Office Action does not state this with certainty. Confirmation is respectfully requested in the next communication from the Office. IN any event, Applicants are allowing claims 19-24 to remain pending until such time as this application is allowed.

Objection to claim 3

Claim 2 has been amended to address the objection made in the Office Action. Therefore, the objection should be withdrawn.

Traversal of the rejection of claims 1-18 under 35 U.S.C. §103 (a) as being obvious over U.S. Patent No. 4,222,128 ("TOMONAGA").

Reconsideration and withdrawal of the rejection under 35 U.S.C. §103 based on TOMONAGA is respectfully requested. There are significant differences between claims 1-18 and TOMONAGA and there is no motivation or suggestion to modify TOMONAGA to arrive at the claimed invention. Accordingly, the rejection should not be maintained and should be withdrawn.

The present invention is directed to a calcium phosphate-synthetic resin composite body produced by pressing a calcium phosphate block, calcium phosphate particles, and synthetic resin particles I, which are at least partially cross-linked in advance, and uncross-linked, synthetic resin particles II while

heating, the calcium phosphate block being exposed on at least part of the surface of the composite body.

As discussed at page 2, lines 17-19. of the specification, one feature of the presently claimed invention is that the calcium phosphate-synthetic resin composite body is produced by pressing a calcium phosphate block, calcium phosphate particles, and synthetic resin particles I, which are at least partially cross-linked in advance, and uncross-linked, synthetic resin particles II while heating in the state where the calcium phosphate block is exposed on at least part of the surface of the composite body, thereby providing a calcium phosphate-synthetic resin composite body having excellent workability, impact resistance, and water resistance, as well as high biocompatibility.

Specifically, by pressing at the time of heating, the synthetic resin particles I are softened while retaining the shapes to some extent for bonding, and the synthetic resin particles II are softened or melted so as to enter voids between the particles. The synthetic resin particles II filling voids between the particles act as binders. In normal conditions, not only are the calcium phosphate particles firmly fixed by the synthetic resin particles I and II, but also the synthetic resin particles I and II are firmly bonded to each other. At the time of cutting and polishing, however, exfoliation occurs at interfaces between the calcium phosphate particles and the synthetic resin particles and at interfaces between the synthetic resin particles I and II. Therefore, the calcium phosphate-synthetic resin composite body containing the calcium phosphate particles has excellent workability.

It appears that the Office Action mistakenly concludes that the synthetic resin particles used in the present invention are the same as the resins taught in TOMONAGA. Applicants respectfully submit that TOMONAGA merely discloses a composite implant material comprising a sintered apatite material and a thermoplastic or thermosetting resin. At least the sintered apatite material exists in a continuous phase and the respective phases of the sintered material and the thermoplastic or thermosetting resin is exposed, in part, to the surface of the implant material (Col. 1, lines 55-61).

In the present invention, the synthetic resin particles I, at least partially cross-linked in advance, retain their shapes to some extent while heating, so that the resulting calcium phosphate-synthetic resin composite body is excellent in workability due to the occurrence of exfoliation at interfaces between the calcium phosphate particles and the synthetic resin particles and at interfaces between the synthetic resin particles I and II at the time of cutting and polishing.

On the contrary, in the composite material of TOMONAGA, the thermoplastic or thermosetting resin may be directly impregnated into the pores of the sintered apatite material, and accordingly, the resin should be presumably used in a liquid state thereof. The thermosetting resin is originally in liquid form, and is cured by heating in the presence of a curing agent as described in the examples of TOMONAGA. With respect to the thermoplastic resin, even though it has a particle shape, the particle shape thereof cannot be retained by melting while heating.

Accordingly, the composite implant material of TOMONAGA does not have interfaces between the resin particles, while the resin particles used are integrated thereby allowing the implant material to be poor in workability as compared with that in the calcium phosphate-synthetic resin composite body of the present invention.

In addition, Applicants respectfully submit that TOMONAGA is silent regarding the simultaneous use of both of a thermoplastic and a thermosetting resin.

Therefore, one of ordinary skill in the art would not be motivated to modify TOMONAGA, which does not teach or suggest any use of synthetic resin particles I, which are at least partially cross-linked in advance, and uncross-linked, synthetic resin particles II, to arrive at the presently claimed invention.

Accordingly, a *prima facie* case of obviousness has not been properly established and the rejection should be withdrawn.

CONCLUSION

In view of the foregoing, it is believed that all of the claims in this application are in condition for allowance, which action is respectfully requested. If any issues yet remain which can be resolved by a telephone conference, the Examiner is respectfully invited to telephone the undersigned at the telephone number below.

Respectfully Submitted,
Tsuneo HIRAIDE et al.



Bruce H. Bernstein
Reg. No. 29,027

July 7, 2005
GREENBLUM & BERNSTEIN, P.L.C.
1950 Roland Clarke Place
Reston, VA 20191
(703) 716-1191

Stephen M. Roylance
Reg. No. 31,296